

Complete Summary

GUIDELINE TITLE

Upper extremity musculoskeletal disorders.

BIBLIOGRAPHIC SOURCE(S)

Brigham and Women's Hospital. Upper extremity musculoskeletal disorders. A guide to prevention, diagnosis and treatment. Boston (MA): Brigham and Women's Hospital; 2003. 9 p. [6 references]

GUIDELINE STATUS

This is the current release of the guideline.

** REGULATORY ALERT **

FDA WARNING/REGULATORY ALERT

Note from the National Guideline Clearinghouse: This guideline references a drug(s) for which important revised regulatory information has been released.

On April 7, 2005, after concluding that the overall risk versus benefit profile is unfavorable, the FDA requested that Pfizer, Inc voluntarily withdraw Bextra (valdecoxib) from the market. The FDA also asked manufacturers of all marketed prescription nonsteroidal anti-inflammatory drugs (NSAIDs), including Celebrex (celecoxib), a COX-2 selective NSAID, to revise the labeling (package insert) for their products to include a boxed warning and a Medication Guide. Finally, FDA asked manufacturers of non-prescription (over the counter [OTC]) NSAIDs to revise their labeling to include more specific information about the potential gastrointestinal (GI) and cardiovascular (CV) risks, and information to assist consumers in the safe use of the drug. See the [FDA Web site](#) for more information.

Subsequently, on June 15, 2005, the FDA requested that sponsors of all non-steroidal anti-inflammatory drugs (NSAID) make labeling changes to their products. FDA recommended proposed labeling for both the prescription and over-the-counter (OTC) NSAIDs and a medication guide for the entire class of prescription products. All sponsors of marketed prescription NSAIDs, including Celebrex (celecoxib), a COX-2 selective NSAID, have been asked to revise the labeling (package insert) for their products to include a boxed warning, highlighting the potential for increased risk of cardiovascular (CV) events and the well described, serious, potential life-threatening gastrointestinal (GI) bleeding associated with their use. FDA regulation 21CFR 208 requires a Medication Guide to be provided with each prescription that is dispensed for products that FDA

determines pose a serious and significant public health concern. See the [FDA Web site](#) for more information.

COMPLETE SUMMARY CONTENT

** REGULATORY ALERT **

SCOPE

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INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT

CATEGORIES

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SCOPE

DISEASE/CONDITION(S)

Upper extremity musculoskeletal disorders, including:

- Shoulder pain (rotator cuff tear, frozen shoulder)
- Elbow and wrist pain (lateral or medial epicondylitis, carpal tunnel syndrome, de Quervain's tenosynovitis, cervical radiculopathy)

GUIDELINE CATEGORY

Diagnosis

Prevention

Treatment

CLINICAL SPECIALTY

Family Practice

Internal Medicine

Orthopedic Surgery

Physical Medicine and Rehabilitation

Preventive Medicine

Sports Medicine

INTENDED USERS

Advanced Practice Nurses

Health Care Providers

Occupational Therapists

Physical Therapists

Physician Assistants

Physicians

GUIDELINE OBJECTIVE(S)

To provide physicians with a clear approach to the diagnosis and treatment of certain musculoskeletal disorders

TARGET POPULATION

Women with upper extremity musculoskeletal pain or dysfunction

INTERVENTIONS AND PRACTICES CONSIDERED

Diagnosis

1. History
2. Physical examination, including evaluation of active and passive range-of-motion
3. Diagnostic testing, such as radiography or magnetic resonance imaging (MRI)

Treatment

1. Ice
2. Rest
3. Nonsteroidal anti-inflammatory drugs (NSAIDs)
4. Splinting
5. Corticosteroids
6. Exercise
7. Referral to physical/occupational therapy
8. Referral to a specialist
9. Surgical intervention

MAJOR OUTCOMES CONSIDERED

Not stated

METHODOLOGY

METHODS USED TO COLLECT/SELECT EVIDENCE

Hand-searches of Published Literature (Secondary Sources)
Searches of Electronic Databases

DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE

The guideline developer performed literature searches using Medline.

NUMBER OF SOURCE DOCUMENTS

Not stated

METHODS USED TO ASSESS THE QUALITY AND STRENGTH OF THE EVIDENCE

Not stated

RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE

Not stated

METHODS USED TO ANALYZE THE EVIDENCE

Review

DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE

Not applicable

METHODS USED TO FORMULATE THE RECOMMENDATIONS

Not stated

RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS

Not applicable

COST ANALYSIS

A formal cost analysis was not performed and published cost analyses were not reviewed.

METHOD OF GUIDELINE VALIDATION

Peer Review

DESCRIPTION OF METHOD OF GUIDELINE VALIDATION

Not stated

RECOMMENDATIONS

MAJOR RECOMMENDATIONS

Evaluation and Treatment of Shoulder Pain

Rotator Cuff Injury or Shoulder Impingement Syndrome

Presentation:

- Pain with overhead reaching (difficulty driving, turning steering wheel, throwing coins into turnstile, or putting on a sweater or jacket)
- Pain with rolling over onto the affected side with sleeping
- Point to subacromial space or the lateral deltoid as the painful area
- With impingement, patients may also complain of catching or pinching sensation

Physical Exam:

- Tenderness over greater tuberosity of humerus and along the top of the shoulder may be present

Range of motion

Active

The following maneuvers will result in pain:

- Hands clasped behind the neck
- Scratching lower back with hand on affected side
- "Painful arc" maneuver--have patient abduct arm. Pain occurring between 60 and 120 degrees is classic finding

Passive

- Loss of passive range of motion occurs if condition is chronic
- "Drop arm test"--abduct the involved arm to 90 degrees, with the patient standing. When the arm is at shoulder level ask the patient to hold the arm at that position as you let go of the arm. If the arm "sinks", a tendon rupture is likely

Diagnostic Testing:

- Radiographs may show an offending bone spur that could cause impingement
- Magnetic resonance imaging (MRI) can document tears and should be done if surgery is being considered (see Surgical Intervention section below). MRIs should probably only be ordered by subspecialists when surgery is under consideration
- Arthrography may be useful in patients in whom MRI is contraindicated (e.g. patients with pacemaker)

Treatment:

- Ice entire shoulder 15-20 minutes twice daily
- Nonsteroidal anti-inflammatory drugs (NSAIDs)
- Start with gentle range of motion exercises. As patient improves, shoulder stabilization and strengthening exercises
- Active range of motion exercises for elbow and active assistive exercises for shoulder (pendulum wand)
- Shoulder strengthening exercises

Physical Therapy Recommendations:

- Refer to physical therapy if no improvement after 4 weeks of the above exercises
- Mobility (wand, pendulum) and strengthening exercises
- Theraband exercises to strengthen internal and external rotator muscles

Referral:

- If above measures ineffective, consider referral to orthopedics, sports medicine, rheumatology for corticosteroid injection

Surgical Intervention:

- Surgery may be required in patients who do not respond to physical therapy or corticosteroid injection
- Less successful in patients over 60 with chronic rotator cuff injuries

Bicipital Tendinitis

Presentation:

- Presentation very similar to impingement, except pain is in the bicipital groove
- Pain with lifting, pulling
- May note a lump above the antecubital fossa, with a "Popeye" appearance in the case of bicipital tendon rupture

Physical Exam:

- Bicipital groove tenderness, particularly painful with curls

Range of motion

Active

- Pain is aggravated by resisted shoulder flexion with elbow in fullness extension and forearm supinated (Speed's test) or "arm wrestling" (Yergason's test)

Passive

- Normal

Diagnostic Testing:

- Imaging rarely needed--diagnosis based on exam

Treatment:

- Ice over anterior biceps tendon 15-20 minutes once or twice daily
- NSAIDs
- Eliminate lifting with elbow flexion, reaching and above shoulder-level positions. Avoid rounded positioning
- Start with gentle range of motion exercises. As patient improves, shoulder stabilization exercises.
- Active range of motion exercises for elbow and active assistive exercises for shoulder (pendulum, wand)
- Shoulder strengthening exercises

Physical Therapy Recommendations:

- Refer to physical therapy if no improvement after 4 weeks of the above exercises

Referral:

- If symptoms persist after 6 weeks, refer to orthopedics, sports medicine or rheumatology

Surgical Intervention:

- Rarely necessary

Rotator Cuff Tear

Presentation:

- Lateral deltoid pain
- Weakness may be present in setting of a tear
- Patients describe pain with overhead reaching
- Usually seen in women over 30 and is due to improper use and lack of conditioning

Physical Exam:

- Atrophy of the infraspinatus or supraspinatus muscles may be present with an injury that is several weeks old
- Subacromial tenderness

Range-of-motion

Active

- Decreased external rotation or mid-arc abduction
- Difficulty with overhead reaching and lifting of 2 to 5 lb. weights overhead
- "Lag signs" suggest rupture. When arm is passively abducted or externally rotated and released it drifts back to original position

Passive

- May be limited with pain on range-of-motion maneuvers

Diagnostic Testing:

- If history of trauma, MRI should be ordered
- If no history of trauma, plain films should be obtained to rule out other causes of shoulder pain

Treatment:

If history of acute trauma:

- Refer for MRI and surgery (see below)

If no history of trauma:

- Ice entire shoulder 15-20 minutes twice daily
- NSAIDs
- Start with gentle range-of-motion exercises. As patient improves, shoulder stabilization and strengthening exercises
- Active range-of-motion exercises for elbow and active assistive exercises for shoulder (pendulum, wand)
- Shoulder strengthening exercises

Physical Therapy Recommendations:

- Refer to physical therapy if no improvement after 4 weeks of the above exercises
- Mobility (wand, pendulum) and strengthening exercises
- Iontophoresis utilizing 4 mg/ml dexamethasone for transdermal transmission may be indicated (done by physical therapy) if patients cannot do exercises
- Ultrasound

Referral:

- If acute history of trauma, refer to surgery

Surgical Intervention:

- Patients with a markedly positive "lag signs" should be referred to surgery immediately

Frozen Shoulder

Presentation:

- Primarily patients complain of stiffness
- Difficulty with range-of-motion; patients cannot put on coat or scratch back

Physical Exam:

Range-of-motion

Active and passive

- Severe restriction of active and passive range-of-motion
- Apley test (trying to scratch with affected arm) is abnormal
- Affected arm will abduct to a lesser degree with the NFL touchdown motion

Diagnostic Testing:

- Radiograph usually will be normal but should be done to rule out other causes of shoulder pain

Treatment:

- NSAIDs
- Refer to physical therapy (see below)
- Recovery may take 6 to 18 months
- Complete recovery occurs in 90% of patients

Physical Therapy Recommendations:

- Range-of-motion, pendulum, and strengthening exercises. Patients with this diagnosis should be referred to physical therapy early for aggressive intervention. Less compliant patients will need closer monitoring and instruction

Referral:

- Consider referral to orthopedic surgery if patients fail to improve after above measures

Surgical Intervention:

- May be necessary in refractory cases. Manipulation of joint under anesthesia to break up adhesions

Epicondylitis (Lateral or Medial)

Presentation:

- Tenderness, pain at lateral (tennis elbow) or medial epicondyle
- Pain may extend to muscles of forearm
- Activities involving wrist extension, especially against resistance (e.g. reaching into refrigerator to lift a gallon of milk) worsens pain

Physical Exam:

- Extension of wrist and fingers against resistance elicits pain in the extensor tendon

- Passively flex the patient's wrist to the end of the range of motion with the elbow straight. Elicits pain in elbow

Diagnostic Testing:

- Obtaining a good history with appropriate symptom location is the best test
- X-rays of the elbow are not necessary if the patient has full range of motion of the elbow

Treatment:

- Ice -- Apply ice for 15-20 minutes several times a day
- Rest -- Ergonomic changes--assessment of the position of computer keyboards or other work station corrections are recommended
- NSAIDs -- Useful
- Splinting -- Elbow strap may aid in pain management by exerting counter-pressure on the soft tissue below the lateral epicondyle
- Short-term use of wrist splint may reduce pain from lateral epicondylitis
- Anterior elbow splint useful for medial epicondylitis management
- Corticosteroids -- Injection of cortisone in the affected epicondyle or iontophoresis (done by a physical or occupational therapist)

Physical or Occupational Therapy Recommendations:

- Refer to physical or occupational therapy for pain management, postural and activity corrections and stretching

Specialty Referral:

- Above measures effective in 80% of cases. If still symptomatic, referral to specialist for consideration and corticosteroid injection or surgery

Surgical Intervention:

- Surgical procedures are a last resort, after all other therapies have failed

Carpel Tunnel Syndrome

Presentation:

- Pain, numbness, or tingling in the hand, wrist, palm, thumb, or first three fingers
- May complain of diffuse numbness in the forearm, upper arm, and shoulder
- Dorsal side of the hand is spared
- Pain may wake patient up at night. Often describe shaking the hand or running their hand under water to obtain relief

Physical Exam:

- Tinel's sign: tingling is reproduced by tapping anterior wrist with a reflex hammer

- Phalen's test: tingling is reproduced by having the patients press the dorsum of his/her hands together with the wrists flexed at 90 degrees for 1 minute

Note: These tests have only modest sensitivity and specificity

Diagnostic Testing:

- Consider occult thyroid disease, diabetes mellitus, or inflammatory arthritis. May also occur in 2nd or 3rd trimester of a pregnancy
- Surgeons often request confirmation of the diagnosis by electrodiagnostic testing before taking patient to the operating room

Treatment:

- Ice -- not applicable
- Rest -- Avoidance of activity that induced symptoms is recommended. Ergonomic changes--assessment of the position of the computer keyboards or other work station corrections are recommended
- NSAIDs -- Useful
- Splinting -- Light-weight wrist splinter, either prefabricated or custom made, designed to maintain the wrist in a neutral position for night-time use
- Corticosteroids -- If all the above measures fail, corticosteroid injection into the carpal tunnel may be useful

Physical or Occupational Therapy Recommendations:

- Refer to occupational therapy for evaluation

Specialty Referral:

- Above measures effective in 80% of cases. If still symptomatic, referral to specialist for consideration and corticosteroid injection, or surgery.

Surgical Intervention:

- In the rare patients who are refractory to these measures, or who have ongoing hand weakness, surgical decompression of the carpal tunnel may be necessary
- Surgery has an excellent outcome in most cases, provided risk factors (such as overuse activities at work) are addressed

De Quervain's Tenosynovitis

Presentation:

- Pain at the radial side of the wrist with lifting
- Difficulty gripping
- Often the condition occurs as the result of lifting infants with the second metacarpals (web between the thumb and the index finger) under the baby's axillae

Physical Exam:

- Local tenderness over the distal portion of the radial styloid, adjacent to the abductor pollicis longus tendon
- Pain aggravated by resisting thumb extension
- Pain and difficulty moving the thumb when opening and closing the hand
- Aggravation of pain with stretching the patient's fist inferiorly while the patient curls her fingers around the thumb with the thumb pointing downward (the Finkelstein maneuver)

Diagnostic Testing:

- In the absence of trauma to the distal radius, a history of wrist pain and radial styloid tenderness coupled with pain aggravated by resisting thumb extension is highly suggestive of active de Quervain's tenosynovitis
- X-rays of the wrist and thumb are not necessary

Treatment:

- Ice
- NSAIDs
- Splinting of the affected thumb
- Corticosteroid injection by a specialist may be very helpful

Physical Therapy Recommendations:

- Refer to physical therapy for long opponens splint

Referral:

- If symptoms persist for > 6 weeks, then refer for specialty evaluation (orthopedics, sports medicine, rheumatology) and possible corticosteroid injection

Surgical Intervention:

- Surgery is rarely necessary

Cervical Radiculopathy

Presentation:

- Pain in shoulder, elbow, or forearm
- Pain often has a burning quality
- May have numbness in elbow area, forearm, or hand
- Increased pain with Valsalva

Physical Exam:

Neural tension maneuvers

- Rotate neck away from affected side and actively extend the arm behind the patient's back at shoulder height with elbow straight. Grasp the fingers of the patient's hand, pull the fingers down, palmar flexing the wrist (in the "kissing the hand" position). Patient will feel pain in posterior shoulder
- Repeat with dorsiflexed wrist, fingers pointing down, palm facing out. Numbness or tingling of the elbow or hand suggests cervical radiculopathy

Diagnostic Testing:

- MRI should only be done if surgery is being considered. MRI will show disc bulge or spinal stenosis
- If bowel or bladder incontinence or lower extremity weakness, MRI should be obtained emergently

Treatment:

- Rest
- Soft Collar
- NSAIDs

Physical Therapy Recommendations:

- Refer to physical therapist for cervical traction

Referral:

- If symptoms persist for > 6 weeks, then refer for specialty evaluation (orthopedics, rheumatology, neurology)

Surgical Intervention:

- Surgery is indicated if pain prevents patient from functioning, or if there is spinal cord compression, or weakness

CLINICAL ALGORITHM(S)

An algorithm is provided in the original guideline document for shoulder pain.

EVIDENCE SUPPORTING THE RECOMMENDATIONS

TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS

The recommendations are based on a comprehensive assessment of recent literature on musculoskeletal disorders.

BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

POTENTIAL BENEFITS

Appropriate diagnosis and treatment of upper extremity musculoskeletal disorders in women

POTENTIAL HARMS

Not stated

QUALIFYING STATEMENTS

QUALIFYING STATEMENTS

This guide is not intended to convey rigid standards. Instead, it should be tailored to the needs of each individual patient.

IMPLEMENTATION OF THE GUIDELINE

DESCRIPTION OF IMPLEMENTATION STRATEGY

An implementation strategy was not provided.

IMPLEMENTATION TOOLS

Clinical Algorithm

For information about [availability](#), see the "Availability of Companion Documents" and "Patient Resources" fields below.

INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES

IOM CARE NEED

Getting Better

IOM DOMAIN

Effectiveness

IDENTIFYING INFORMATION AND AVAILABILITY

BIBLIOGRAPHIC SOURCE(S)

Brigham and Women's Hospital. Upper extremity musculoskeletal disorders. A guide to prevention, diagnosis and treatment. Boston (MA): Brigham and Women's Hospital; 2003. 9 p. [6 references]

ADAPTATION

Not applicable: The guideline was not adapted from another source.

DATE RELEASED

2003

GUIDELINE DEVELOPER(S)

Brigham and Women's Hospital (Boston) - Hospital/Medical Center

SOURCE(S) OF FUNDING

Brigham and Women's Hospital

GUIDELINE COMMITTEE

Not stated

COMPOSITION OF GROUP THAT AUTHORED THE GUIDELINE

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FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST

Not stated

GUIDELINE STATUS

This is the current release of the guideline.

GUIDELINE AVAILABILITY

Print copies: Available from the Brigham and Women's Hospital, 75 Francis Street, Boston, Massachusetts 02115. Telephone: (800) BWH-9999.

AVAILABILITY OF COMPANION DOCUMENTS

None available

PATIENT RESOURCES

None available

NGC STATUS

This NGC summary was completed by ECRI on August 20, 2003. This summary was updated on May 3, 2005 following the withdrawal of Bextra (valdecoxib) from the market and the release of heightened warnings for Celebrex (celecoxib) and other nonselective nonsteroidal anti-inflammatory drugs (NSAIDs). This summary was updated by ECRI on June 16, 2005, following the U.S. Food and Drug Administration advisory on COX-2 selective and non-selective non-steroidal anti-inflammatory drugs (NSAIDs).

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